DOCUMENT RESUME

ED 096 319 TM 003 890

AUTHOR	Jenkins, W. O.; And Others
TITLE	The Weekly Activity Record (WAR): A Measure of Time Allocation in the Analysis and Prediction of Criminal Behavior and Recidivism.
INSTITUTION	Rehabilitation Research Foundation, Montgomery, Ala.
SPONS AGENCY	Manpower Administration (DOL), Washington, D.C. Office of Research and Development.
REPORT NO	DLMA-21-01-73-38-6
PUB DATE	Apr 74
NOTE	30p.; For a related document, see TM 003 948
AVAILABLE FROM	National Technical Information Service, Springfield, Virginia 22151 ($3.00)
EDRS PRICE	MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS	*Individual Activities; Interviews; Males; *Predictive Validity; *Prisoners; Recidivism; *Records (Forms); Rehabilitation; *Socially Deviant Behavior; Statistical Analysis; Test Construction
IDENTIFIERS	*Weekly Activity Record

ABSTRACT

This report describes the development and validation of the Weekly Activity Record (WAR), an instrument for the analysis and prediction of criminal behavior and recidivism. The 18 items on the instrument record the hours per week devoted to various activities: vocational, avocational, social, physical, antisocial, personal, and interpersonal. The WAR was used with other behavioral assessment instruments in interviews with 117 male prison releasees. The data in this report were taken from those interviews and validated against the Law Encounter Severity Scale (LESS), a criterion for law violation and recidivism. Releasees with minimal law encounters were found to devote significantly more time to positive activities (those that contribute to successful postrelease adjustment) than did those releasees who had more severe law encounters. WAR scores of the releasees were also compared to those of noncriminal populations. (Author)

ED 096319

THE WEEKLY ACTIVITY RECORD (WAR): A MEASURE OF TIME ALLOCATION IN THE ANALYSIS AND PREDICTION OF CRIMINAL BEHAVIOR AND RECIDIVISM

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RRF-911-3-74

TM 003 890

This report on the Experimental Manpower Laboratory for Corrections was prepared under Grant No. 21-01-73-38 with Manpower Administration, U. S. Department of Labor. Organizations undertaking such projects under Federal Government sponsorship are encouraged to express their own judgement freely. Therefore, points of view or opinions stated in this document do not necessarily represent the official position or policy of the Department of Labor or other federal agencies mentioned herein.

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STANDARD TITLE PAGE FOR TECHNICAL REPORTS	1. Report No. DLMA - 21-01-73-38-6	2. Govt. Accession No.	3. Recipient's Catalog No. N/A
4. Title and Subtitle: The Weekly Activity Record (WAR): A Measure of Time Allocation in the Analysis and Prediction of Criminal Behavior and Recidivism			5. Report Date: Mar. 74 6. Performing Organization Code: N/A
7. Author(s): W. O. Jenkins, J. B. Muller, M. D. DeVine, E. K. deValera, A. D. Witherspoon, and J. M. McKee			8. Performing Organization Rept. No. 911
9. Performing Organization Name and Address: Rehabilitation Research Foundation P. O. Box 3587 Montgomery, Alabama 36109			10. Project/Task/Work Unit No. N/A 11. Contract/Grant No. DL 21-01-73-38
12. Sponsoring Agency Name and Address: U.S. Department of Labor Manpower Administration Office of Research and Development 1111 20th St., N.W. Washington, D.C. 20210			13. Type of Report & Period Covered: Technical Report 14. Sponsoring Agency Code: N/A

15. Supplementary Notes: This report is one of a series of eight stemming from a longitudinal follow-up of prison releasees, a study conducted by the Experimental Manpower Laboratory for Corrections between Oct. 1970 and Jan. 1973.

16. Abstracts

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17. Key Words and Document Analysis. 17a. Descriptors

Adjustment
Evaluation
Males
Rehabilitation
Statistical Analysis

17b. Identifiers/Open-Ended Terms

Environmental Deprivation Scale
Law Encounter Severity Scale
Maladaptive Behavior Record
Weekly Activity Record

17c. COSATI Field/Group: 5J & 5K

18. Distribution Statement	19. Security Class (This Report)	21. No. of Pages
Distribution is unlimited. Available from National Technical Information Service, Springfield Va., 22151.	UNCLASSIFIED	32
	20. Security Class (This Page) UNCLASSIFIED	22. Price $3.00

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Preface

This report focuses on the development and validation of the Weekly Activity Record (WAR), a measure of time allocation of behavior. It is one of eight reports stemming from the 1971 Follow-up Study. The other seven deal with the following topics:

- The overall methodology and outcomes of the 1971 Follow-up Study.
- The development of the Law Encounter Severity Scale (LESS), the criterion for law-violating and criminal behavior and recidivism.
- The further validation of the Environmental Deprivation Scale (EDS), a measure of environmental input and support for adaptive behavior.
- The validation of the Maladaptive Behavior Record (MBR), a measure of behaviors leading to law encounters and violations.
- The psychometric details of analysis of the data from these predictive instruments, including reliability intercorrelations, etc.
- The development of a behavioral interview guide.
- A number of *hypothesis generating studies* that developed from the comprehensive follow-up data and that suggest new research dimensions.

THE WEEKLY ACTIVITY RECORD (WAR): A MEASURE OF TIME ALLOCATION IN THE ANALYSIS AND PREDICTION OF CRIMINAL BEHAVIOR AND RECIDIVISM

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Abstract

This report describes the development and validation of the Weekly Activity Record (WAR), an instrument designed to analyze and predict criminal behavior and recidivism. The 18 items on the instrument record the hours per week devoted to various usual activities: vocational, avocational, social, physical, antisocial, personal, and interpersonal. The WAR was developed for use in a longitudinal follow-up study of the released offender that dealt with the predictive analysis of criminal behavior as it relates to more effective intervention and treatment.

The WAR was administered to 117 prison releasees in a behavioral interview. The data were validated against the Law Encounter Severity Scale (LESS), a five-part criterion of criminal behavior that ranges from no law encounters to return to prison for a life sentence.

Releasees with minimal law encounters were found to devote significantly more time to work, eating and drinking, cleanliness, religion, shopping, physical activity, hobbies, intellectual activities, and family activities. Those with more severe law encounters allocated significantly more time to social behavior, antisocial behavior, maladaptive associates, and waiting. Sleep and daydreaming favored the less severe law encounter groups and sexual behavior, the more severe, but not significantly in either case. These trends were quite consistent: the less severe the law encounter the greater the amount of time devoted to positive activities (those that contribute to successful postrelease adjustment) and the more severe, the greater the amount of time spent at negative activities. Comparisons of the releasees with noncriminal populations show greater amounts of time spent by the latter in positive activities and lesser amounts in negative activities.

The WAR adds another dimension to the prediction of criminal behavior, complementing the other two instruments used in the follow-up study, the Environmental

Deprivation Scale (EDS) and the Maladaptive Behavior Record (MBR). The predictive accuracies of the EDS, MBR, and WAR are 90%, 85%, and 80%, respectively. All three measures identify at least four of five individuals who will fail (return to prison) or succeed in their postrelease adjustment.

Statement of the Problem

In 1969 the Experimental Manpower Laboratory for Corrections (EMLC) initiated a series of studies of the postrelease adjustment of released or paroled offenders. The research reported here is part of the 1971 Follow-up Study, which replicates, in part, a previous study referred to as the 1969 Follow-up Study (Jenkins, Barton, deValera, DeVine, Witherspoon, Muller, & McKee, 1973). The studies had three primary objectives: (1) to identify the environmental and behavioral particulars which influence postrelease adjustment, in order to develop measures predictive of law-violating behaviors and recidivism, (2) to construct a methodological vehicle for longitudinal follow-up evaluation of institutional treatment programs, and (3) to utilize this behavioral diagnostic information to develop effective institutional and community treatment programs.

Two predictive instruments were developed, applied, and validated early in the follow-up studies. The first was the Environmental Deprivation Scale (EDS), a 16-item scale that is used in a behavioral interview to collect information concerning sources of environmental input and support (DeVine, Jenkins, Witherspoon, deValera, Muller, & McKee, 1974; Jenkins, Barton, deValera, DeVine, Witherspoon, & Muller, 1972; Jenkins, Barton, deValera, DeVine, Witherspoon, Muller, & McKee, 1973). The EDS predicts recidivism with 90% overall accuracy.

The second predictive instrument developed was the Maladaptive Behavior Record (MBR). It deals with specific, maladjustive behaviors that constitute antecedent conditions for the occurrence of law violation and criminal behavior. The overall predictive accuracy of the MBR is about 85% (Jenkins, Barton, deValera, DeVine, Witherspoon, & Muller,1972; Jenkins, Barton, DeVine, deValera, Muller, Witherspoon, & McKee, 1974).

Most behavioral scales and checklists, including the EDS and MBR, measure the frequency of occurrence or intensity (severity) of particular kinds of environmental or behavioral events. Other dimensions of behavioral measurement appear to be relevant and useful for generating basic data of a different variety, however. One of the most obvious dimensions of measurement is that of duration, a common property of all behavior. Duration has considerable a priori value, independent of frequency, i.e., a person may participate in a particular activity infrequently but for long duration on any one occasion. Duration is also independent of severity: a crime may occur once, but it may have been planned over the better part of a year and carry a sentence of life imprisonment for conviction.

In light of these considerations, the Weekly Activity Record (WAR) was developed as an index of time allocation–a response measure of human, everyday activity that deals with the amount of time devoted to (or the duration of) typical weekly activities. The weekly time unit provides a relatively large and representative sample of a variety of behaviors. This report describes the development of the WAR, summarizes the data collection and scoring methods, and presents the validating outcomes of the WAR in the prediction of law encounters, law violations, and recidivism.

Development and Description of the WAR

The WAR was developed to complement the MBR by focusing on the duration of ex-offender behavior. The basic concepts of the WAR emerged empirically from feedback in the 1969 Follow-up Study and from discussions with prison inmates, releasees, EMLC staff, and graduate students. A preliminary instrument was administered late in the 1969 study to released or paroled ex-offenders and to college students. Following the review of the results, a revised form was first tried in the field in January, 1971. Initial analysis disclosed a high degree of prediction of criminal behavior. The instrument was further modified and refined to yield the current version.

Description of the Items

The 18 items that emerged from repeated use and refinement of the WAR cover the durational dimension of explicit classes of usual and basic activities. A brief description of each item follows:

1. *Work*. For ex-offenders (and other non-students) this is a straightforward count of hours spent at compensated employment per week. With students, class and study hours were added to the hours for part- or full-time employment to arrive at the weekly total.
2. *Sleep*. Hours of sleep per week are recorded for this item, along with patterns such as sleeping late on weekends and daytime sleeping.
3. *Eating and Drinking*. This item includes hours spent at meals and snacks and the time devoted to meal planning and preparation.
4. *Cleaning and Grooming*. Recorded here are total hours spent at bathing, shaving, shampooing, hair styling and combing, nail grooming, house cleaning, redecorating, clothes care, and other cleanliness behaviors.

5. *Religious and Other Organizational Behavior.* This item centers on time allocated per week to religious observance or practice and to other organizational activities, including such groups as Chamber of Commerce, Civitans, and Alcoholics Anonymous.

6. *Shopping.* All forms of shopping for food, drink, clothes, toilet articles, etc., as well as window shopping, are included in this item.

7. *Physical Activity and Health.* Hours spent at exercise, jogging, active sports, etc., are added to time spent in visits to doctors and dentists and in using health aids.

8. *Hobbies.* This item covers all avocational pursuits that show a regular recurrence in *S*'s behavior. They may range from stamp collecting to sky-diving and include time spent talking about or preparing for the activity.

9. *Intellectual Activities.* The time spent studying or reading for improvement, in areas outside of vocation, is totaled, e.g., reading *War and Peace* rather than a comic book.

10. *Watching, Reading, and Listening.* Here a record is made of time spent watching TV or sports events; listening to radio, records, or music; and reading magazines, newspapers, and light fiction.

11. *Family Activities.* This item totals the hours spent interacting with parents, spouse, children, siblings, and other family members at specific activities such as movies, dining out, outings, talks, phone calls, letters, and visits.

12. *Social Behavior.* Recorded here is the time allocated to parties, games, dates, dining, or talking with persons other than family.

13. *Sexual Behavior.* This item includes time spent seeking, planning, preparing for, and engaging in all forms of sexual behavior.

14. *Antisocial Behavior.* This item covers verbal or physical fighting, abuse of alcohol or drugs, social withdrawal, and other deviant or law-violating behaviors.

15. *Daydreaming.* Here are recorded the hours per week spent fantasizing, "doing nothing," "thinking about things," "sitting around," or other solitary behaviors which do not involve systematic activity of an avocational nature.

16. *Maladaptive Associates.* For ex-offenders this item explicitly refers to time spent with other ex-offenders, but also has the more general meaning of time spent with people who tend to cue or support maladaptive behaviors.

17. *Travel.* This item records the weekly number of hours involved in commuting to and from work, stores, recreational areas, and the like.

18. *Waiting.* Included in this item are hours spent "killing time," waiting for "action" to start, riding around, loitering, waiting in lines while shopping, and waiting for appointments.

These empirically determined items are fundamental to everyday behavior, and, while there is some overlap and interrelationship between the items (e.g., antisocial behavior and maladaptive associates), the behavior classes are mainly discrete and identifiable. The total number of hours for each item is recorded, as well as the specifics, e.g., nature of hobby, typical social activities, and the behavior of maladaptive associates.

Scoring Procedures

The units of measurement used in the initial analyses were raw hours. Because of the overlap between items, *S* variability in total score was appreciable: the mean for the prison releasee group was about 190 hours, with a range from 150 to 300 hours. To minimize the gross variability, a procedure of converting to percentages was employed in which the time recorded for each item was converted to a percentage of the particular *S*'s total number of hours. (There is a clear correspondence between hourly and percentage scores; if *S* is high in one, he is also high in the other.) Item analyses were conducted on both the raw (hourly) scores and converted percentage scores.

In the 1969 Follow-up Study, it was found that some WAR items discriminated positively–the more time devoted to a particular activity, the more likely *S* was to stay out of prison. Other items discriminated negatively–the greater the amount of time spent in these activities, the greater the probability was that *S* would recidivate. In addition, there were several items that failed to discriminate on a large scale between postrelease "success" and "failure," although the items focused on fundamental behavioral areas, e.g., sleep, sexual behavior, and daydreaming. This threefold item-clustering into positive, negative, and neutral groups, derived in the 1969 study, was followed in the current analysis. Positive items were 1, 3-9, and 11; negative items were 10, 12, 14, and 16-18; and neutral items were 2, 13, and 15.

Both the EDS and MBR yield a numerical score indicating a degree of maladaptive environmental input and behavioral output, respectively. Each item on these instruments is scored on a zero-one basis, with "1" indicating maladjustment. The WAR hourly scores were converted to this zero-one scoring scale so as to yield one overall score. The grand mean in hours of all released or paroled *S*s was first calculated separately for each item, regardless of postrelease law encounter status. An individual *S*'s hours on that item were then sorted with regard to this overall average. For the positive items, scores above average were assigned a value of "0" (adaptive) and those below, "1" (maladaptive). The procedure was reversed for the negative items, with above-average scores receiving "1" and below-average scores, "0". The three neutral items showed slight trends and were scored accordingly: Sleep (Item 2) and Daydreaming (Item 15) were scored as positive items and Sexual Behavior (Item 13), as negative. Applying this procedure, item by item, generated an overall numerical score with a potential range from 0 to 18, making the WAR scoring scheme comparable to that of the EDS and MBR and allowing direct comparisons among the three measuring instruments.

Methodology in the Application and Validation of the WAR

The earlier forms of the WAR were used and validated in the 1969 Follow-up Study (Jenkins, et al., 1973). The data reported here, based on the revised 18-item form, were obtained in the 1971 study, which dealt with 142 *S*s released or paroled from Draper Correctional Center between October, 1970, and January, 1973. The WAR was not employed with about 10% of the sample, and another 10% left the geographical area, leaving data for a total of 117 *S*s for which the validation analyses were conducted. Some of the 117 *S*s--both prison returnees and non-returnees--committed one or more misdemeanors or had several law encounters. As a result, a total of 168 WAR measurements paralleling law-encounter status is available for these 117 *S*s.

*S*s were behaviorally interviewed prior to release from prison and at postrelease intervals of 3-6 and 12 months. The interviews were structured by the instruments used: an interview guide, the EDS, MBR, and WAR. Information was sought pertaining to specific behavioral and environmental events in the areas of societal adjustment (which included law encounters), social and interpersonal behavior, occupation and employment, money matters and financial status, housing, and public acceptance. Each *S*'s law encounters were recorded, with the date, and verified when necessary. The average length of time an *S* was followed up was 18 months.

The three WAR scoring methods described previously (hours, percentages, and zero-one) were validated against the EMLC's criterion for law violation and recidivism, the Law Encounter Severity Scale (LESS). The LESS is a continuum of crime severity, consisting of 38 points that range from no law encounters to a felony conviction with a sentence of 20 years or more (including a life sentence or the death penalty). Five LESS groups were formed by combining law encounters of comparable severity into clusters. These may be summarized as follows:

Group I: No law encounters.

Group II: Picked up and/or questioned or searched concerning misdemeanor(s) or felony(s). However, all charges were dropped.

Group III: Awaiting trial for misdemeanor(s) or was tried in court for misdemeanor(s) or felony(s) but was not convicted; picked up for parole violation but parole reinstated (or awaiting hearing); wanted for misdemeanor(s); killed in commission of a misdemeanor; or convicted of misdemeanor and sentenced or fined.

Group IV: Wanted for felony(s); absconded from parole; awaiting trial for felony(s); parole violated and returned to prison; killed during the commission of a felony(s); or convicted for felony(s) and placed on probation or sentenced to less than one year in prison.

Group V: Convicted for felony(s) and sentenced to prison for more than one year.

The overall validation procedure consisted of comparing scores on the 18 WAR items across the five LESS law encounter groups. For example, LESS Group I (no law encounters) shows an average zero-one score of 8-9, while LESS Group V (felony conviction with a sentence of more than one year) averages 12-13.

Results

Stepwise, multiple discriminant analysis has been applied--along with factor analysis--to the WAR data. The results are presented in the overall report of the computer analysis outcomes of the 1971 Follow-up Study (Muller, DeVine, Jenkins, deValera, Witherspoon, & McKee, 1974). It is noteworthy that computer analyses served as backup procedures to supplement the shortcut methods reported here and provided the bases for a considerably more detailed statistical examination.

Time Allocation by LESS Group

Total hours reported for various activities were separated by LESS group and converted to percentages group by group. The percentage data by LESS group are

summarized in Table 1. It should be noted that the average total number of hours, shown at the bottom of the table, yields a large-scale and fairly consistent trend. For instance, Group I differs from Group V by a total of 35 hours (approximately 18%). The effect is orderly. Lower LESS groups show smaller totals, and higher LESS groups show larger totals. The reason for this finding is not immediately obvious. It should also be noted that the figures for the convicted misdemeanor group (III) and the convicted felon groups (IV and V) were obtained *prior* to the commission of the criminal acts involved.

TABLE 1

Percent Weekly Time Allocation for 117 Prison Releasees in the 1971 Follow-up Study Separated by LESS Group (For Groups II-V the *N*s represent total number of law encounters rather than the actual number of *S*s.)

WAR Items	LESS Group				
	I $N = 42$	II $N = 52$	III $N = 30$	IV $N = 20$	V $N = 24$
1. Work	17.4	14.9	16.5	10.7	7.6
2. Sleep	27.4	24.9	25.3	24.5	26.8
3. Eating and Drinking	3.6	4.9	3.9	3.0	2.9
4. Cleaning and Grooming	3.1	2.9	2.7	2.9	2.0
5. Religious and Other Organizational Behavior	.1	.6	.1	.0	.1
6. Shopping	1.7	1.2	1.5	1.2	1.3
7. Physical Activity and Health	1.3	1.1	1.0	.3	.8
8. Hobbies	1.0	1.0	1.0	.3	.9
9. Intellectual Activities	2.4	.2	.2	.1	.1
10. Watching, Reading, and Listening	9.6	8.6	7.9	6.4	8.8
11. Family Activities	6.4	4.6	3.5	4.7	4.1
12. Social Behavior	11.6	12.2	15.2	12.1	15.2
13. Sexual Behavior	1.7	2.1	2.8	1.5	2.4
14. Antisocial Behavior	2.2	4.5	3.5	10.5	6.1
15. Daydreaming	3.0	4.0	2.7	3.1	2.9
16. Maladaptive Associates	2.2	5.3	4.0	10.1	9.3
17. Travel	3.6	3.6	3.6	3.6	3.6
18. Waiting	1.7	3.7	4.5	5.0	5.1
Total percentage	100.0	100.0	100.0	100.0	100.0
Total mean number of hours	192.5	211.0	205.3	239.1	227.6

The outcomes contained in the body of the table may be summarized as follows. Large, consistent, and highly significant differences in time allocation emerge in the following items: Work (Item 1), Antisocial Behavior (Item 14), Maladaptive Associates (Item 16), and Waiting (Item 18). Smaller and less significant differences emerge in the following items: Eating and Drinking (Item 3), Shopping (Item 6), Intellectual Activities (Item 9), Watching, Reading, and Listening (Item 10), and Family Activities (Item 11).

To summarize the complex data in Table 1, items were combined and labeled "positive" on which LESS Groups I and II showed higher percentages and IV and V showed lower percentages. The "positive" items consisted of 1, 3-9, and 11. The items on which Groups IV and V yielded higher percentages than Groups I and II were labeled "negative" and were also combined. These negative items are 10, 12, 14, and 16-18. There remained three items (2, 13, and 15) where no especially consistent or significant trend emerged.

The combined information is contained in Table 2, where large and orderly trends for both positive and negative item clusters may be seen. For instance, Group I (no law encounters) spends almost twice as much time at positive activities as Group V (recidivists). The orderliness of the trends in both positive and negative clusters is completely consistent. These outcomes with WAR clusters are supported by the 1969 Follow-up Study, in which quite similar findings appeared (Jenkins, et al., 1973).

TABLE 2

Percent Time Devoted to Positive, Negative, and Neutral WAR Items by LESS Group (For Groups II-V the *N*s represent the total number of law encounters rather than the actual number of *S*s.)

WAR Item Clusters	LESS Group					
	I $N = 42$	II $N = 52$	III $N = 30$	IV $N = 20$	V $N = 24$	*p*-value
Positive Items (1, 3-9, 11)	37.0	31.5	30.4	23.2	19.8	.001
Negative Items (10, 12, 14, 16-18)	30.9	37.5	38.8	47.7	48.1	.001
Neutral Items (2, 13, 15)	32.1	31.0	30.8	29.1	32.1	.50
Total	100.0	100.0	100.0	100.0	100.0	

Overall the WAR as an index of time allocation appears to be highly discriminative. Prison releasees who have minimal postrelease law encounters devote considerably more time to adaptive activities such as working and considerably less time to maladaptive

behaviors such as antisocial activities than do releasees who have maximal law encounters and are returned to prison.

Comparison of Time Allocation by Prison Releasees and Noncriminals

To compare the WAR scores of criminals and noncriminals, data were collected on two noncriminal samples, one composed of 74 advanced undergraduate college students and the other, of 50 businessmen. The hourly figures on the 18 WAR items for these two samples were converted to percentages and are presented in Table 3 along with the corresponding information for the total prison releasee sample represented in Table 1.[1]

TABLE 3

Percent of Time on WAR Items for Prison Releasees, College Students, and Businessmen

WAR Items	Experimental Groups			
	Prison Releasees (N = 114)	College Students (N = 74)	Businessmen (N = 50)	p-value
1. Work	14.3	19.9	21.4	.001
2. Sleep	25.7	26.4	25.2	.20
3. Eating and Drinking	3.8	7.0	6.4	.001
4. Cleaning and Grooming	2.7	5.5	5.6	.01
5. Religious and Other Organizational Behavior	0.3	0.8	0.9	.01
6. Shopping	1.4	1.7	1.4	.20
7. Physical Activity and Health	0.9	2.7	1.2	.01
8. Hobbies	0.8	1.9	2.9	.001
9. Intellectual Activities	0.7	3.9	2.7	.001
10. Watching, Reading, and Listening	8.5	5.7	7.3	.10
11. Family Activities	4.7	3.9	13.6	.01
12. Social Behavior	13.1	7.0	4.0	.001
13. Sexual Behavior	2.1	3.5	1.9	.10
14. Antisocial Behavior	4.9	1.1	1.1	.001
15. Daydreaming	3.3	3.1	2.1	.20
16. Maladaptive Associates	5.7	0.7	0.1	.001
17. Travel	3.2	3.3	1.0	.20
18. Waiting	3.8	1.8	1.2	.001
Mean total hours	211.4	191.6	203.7	

[1] It should be noted here that the original N of 117 Ss was reduced to 114 when three cards were accidentally destroyed during the analyses. All 3 Ss were in LESS Group I (no law encounters); thus the N of 168 for total law encounters was not affected. In some of the later analyses, however, the original N of 42 in LESS Group I will be reduced to 39.

Large and striking differences between the two noncriminal samples and the prison releasees appear on the following items: Work (Item 1), Eating and Drinking (Item 3), Hobbies (Item 8), Intellectual Activities (Item 9), Social Behavior (Item 12), Antisocial Behavior (Item 14), Maladaptive Associates (Item 15), and Waiting (Item 18). Significant but somewhat smaller differences appear in the following items: Cleaning and Grooming (Item 4), Religious and Other Organizational Behavior (Item 5), Physical Activity and Health (Item 7), and Family Activities (Item 11).

Following the same format as Table 2, positive, negative, and neutral item clusters were formed for the three samples. This basic information is represented in Table 4, where quite large and highly significant differences emerge in both positive and negative item clusters. The business sample, for instance, spends almost twice as much time on positive, adaptive activities as do prison releasees and shows only one-third as much time spent on negative activities. College students are also significantly different from prison releasees in their pattern of time allocation, devoting far more time to adaptive activities.

TABLE 4

Total Percentages by Item Clusters on the WAR for Three Samples

WAR Item Clusters	Experimental Groups			
	Prison Releasees (N = 114)	College Students (N = 74)	Businessmen (N = 50)	p-value
Positive Items (1, 3-9, 11)	29.6	47.3	56.1	.001
Negative Items (10, 12, 14, 16-18)	39.2	19.6	14.7	.001
Neutral Items (2, 13, 15)	31.1	33.0	29.2	.20
Total	99.9	99.9	100.0	

It is recognized, of course, that there are many basic demographic differences, e.g., education, between the prison releasees and the other two samples, but the data of Tables 3 and 4 are primarily a *tour de force* demonstration of the generalized applicability of the WAR to a wide variety of target populations. Incidently, the differences in these tables would have been greatly enhanced if data for only convicted felons (LESS Groups IV and V) had been used. Further reference will be made in later sections of this report to the noncriminal samples.

WAR Zero-One Item Scores by LESS Group

As indicated in the section describing scoring procedures, the hourly figures reported by the prison releasees were converted to zero-one scoring so that the outcome would be consistent with those for the other two predictive instruments, the EDS and MBR. It will be recalled that the "0" was given for more adaptive behavior and "1" for more maladaptive behavior and that the cutoff for the zero-one dichotomy was established at the mean of all prison releasee *S*s combined. In the previous analyses, e.g., Tables 1 and 2, the total number of instances of law encounters was employed, yielding 168. These 168 law encounters were based on the total sample of 114 *S*s, with about 15% of the *S*s contributing two or more law encounters. A WAR score was recorded for each law encounter. For the item validation analysis, however, the sample of 114 *S*s was employed, with the WAR scores used being those closest in time to and preceding the commission of their *most severe* crime.

The item validation data by LESS group are contained in Table 5, where the percentage of "0" (adaptive behavior) for each LESS group on each item is given. Analysis consisted of applying the Q-coefficient to Groups I-II versus III-V and separately to Group I versus IV-V. These Q-coefficients are presented in the last two columns of Table 5. With an *N* of 114, a Q of .15 is significant at the 5% level, .22 at the 1% level, and .28 at the .1% level.

The items yielding the greatest discrimination across LESS groups are: Work (Item 1), Physical Activity and Health (Item 7), Intellectual Activities (Item 9), Antisocial Behavior (Item [illegible]), Maladaptive Associates (Item 16), and Waiting (Item 18). The overall Q-coefficient of these items ranges from .50 to .80. It should be noted that all items, except Sexual Behavior (Item 13), are significant at or beyond the 1% level in the overall analyses. When extreme groups (I versus IV and V) are examined, the magnitude of correlations and the significance level are increased in most instances.

TABLE 5

Percentage of "0" for WAR Items in a Sample of 114 Prison Releasees and Parolees Taken in the 1971 Follow-up Study at 12-15 Months after Release

WAR Items	LESS Group						Validity Coefficients (Q)	
	I $N = 39$	II $N = 18$	III $N = 15$	IV $N = 18$	V $N = 24$	Total $N = 114$	I-II vs III	I vs IV-V
1. Work (40)	74	61	66	44	29	47	.50	.68
2. Sleep (56)	51	55	40	33	25	42	.41	.45
3. Eating and Drinking (7)	56	72	40	50	33	50	.10	.31
4. Cleaning and Grooming (6)	61	44	40	61	45	52	.14	.19
5. Religious and Other Organizational Behavior (1)	33	27	20	11	12	22	.48	.57
6. Shopping (3)	58	44	33	27	41	44	.38	.44
7. Physical Activity and Health (1)	56	44	27	17	25	38	.59	.65
8. Hobbies (1)	28	22	13	11	20	21	.31	.33
9. Intellectual Activities (1)	28	22	6	11	4	16	.65	.67
10. Watching, Reading, and Listening (17)	48	72	67	16	41	48	.31	.36
11. Family Activities (8)	53	55	46	33	37	46	.31	.36
12. Social Behavior (21)	48	72	40	38	29	45	.41	.31
13. Sexual Behavior (4)	46	44	53	27	54	45	.00	.07
14. Antisocial Behavior (2)	82	77	46	27	25	56	.80	.86
15. Daydreaming (5)	61	55	53	38	45	52	.28	.36
16. Maladaptive Associates (2)	64	61	53	22	29	48	.55	.67
17. Travel (6)	43	72	67	44	58	45	.21	.38
18. Waiting (4)	61	67	46	27	29	48	.55	.60

Note.—The hourly cutoffs are given in parentheses.

It is a well-established phenomenon that sampling variation and regression occur on a large scale. Thus, psychological and behavioral phenomenon established on the basis of a single set of observations or a single investigation are subject to maximal chance and regressive effects. The fundamental principle must be recognized that statistical significance at the 1% level occurs on a chance basis precisely one time in one hundred. The only antidote for this dilemma is replication. Only by repeating the investigation and determining consistency of outcomes can the role of chance be minimized. In this context it should be recognized that the results recorded here, and particularly those of Table 5, are a replication of a previous investigation conducted as part of the 1969 Follow-up Study.

In this connection one might well be tempted to apply differential weighting to the individual items of Table 5 in a multiple regression equation. By appropriate statistical manipulations, one should be able to generate a multiple correlation very close to unity (1.00), but, obviously, such a magnitude of covariation is spurious inasmuch as it has not been cross-validated. When cross-validating action is taken in this kind of case, a multiple correlation always regresses and frequently approaches zero (.00), particularly when the number of measurements taken is large and the number of *S*s measured is small.

The results contained in Table 5 are necessarily quite consistent with those of Table 1, since the zero-one scoring procedure was a direct derivative of the percentage allocation of the time by individuals. Furthermore, results obtained with the WAR are completely consistent with the outcomes of the EDS and MBR. (Outcomes concerning the EDS and MBR are reported in separate monographs of this series, all of which deal with the 1971 Follow-up Study.)

WAR Total Zero-One Score

The standard scoring procedure used with the EDS and MBR was applied to the WAR. After each WAR item had been scored "0" or "1", total scores were obtained for each individual. It will be recalled that a "1" indicates maladaptive behavior, thus causing the higher scores to indicate a greater duration, frequency, or amount of maladaptive behavior. Distribution statistics were calculated by LESS group. This information is presented in Table 6, which presents the appropriate means, medians, and ranges. Overall, a quite orderly progression in WAR total score can be seen from Groups I-II to IV-V. The overall ANOVA for these data is highly significant, and multiple comparison tests yield three primary groups: I-II, III, and IV-V. In this context, it might be noted that the discriminating power and predictive accuracy of the WAR for law encounters and violations, though quite high, falls slightly below that of the MBR, the validity of which, in turn, is exceeded by the EDS.

Table 6 also contains the distribution statistics for the 74 college students. The average score for the college sample falls below the average scores for all LESS groups. As expected, the college group devotes less time to maladaptive behaviors than do the prison releasees.

TABLE 6

Distribution Statistics for Zero-One WAR Score for LESS Groups and for a Noncriminal Sample

Items	LESS Group					Total	College Students
	I	II	III	IV	V		
	$N = 39$	$N = 18$	$N = 15$	$N = 18$	$N = 24$	$N = 114$	$N = 74$
Mean	8.5	8.3	10.2	12.5	12.1	10.1	7.3
Median	8.9	8.5	11.4	13.5	12.8	10.4	7.9
Range	4-16	4-13	4-16	7-18	6-18	3-18	3-12

A different way of examining the data of Table 6 is to ask the question: What percentage of cases in each group fell above the grand average for all groups combined? The percentage of each LESS group exhibiting above-average time spent on maladaptive activities is depicted in Figure 1. From this representation it can be seen that this figure ranges from under two-fifths for Groups I-II out to over four-fifths in Group V. The college sample, incidentally, is only 17.6% above the grand average for the prison releasee group. The data of Figure 1 may be compared with those for the EDS, where the percentages range from about 25% for LESS Group I to near 90% for Group V, and with those of the MBR, where the corresponding figures were 25% and 85%. Again, all these instruments demonstrate high predictive efficiency. The sequence, when ordered from most to least predictive, is EDS, MBR, and WAR.

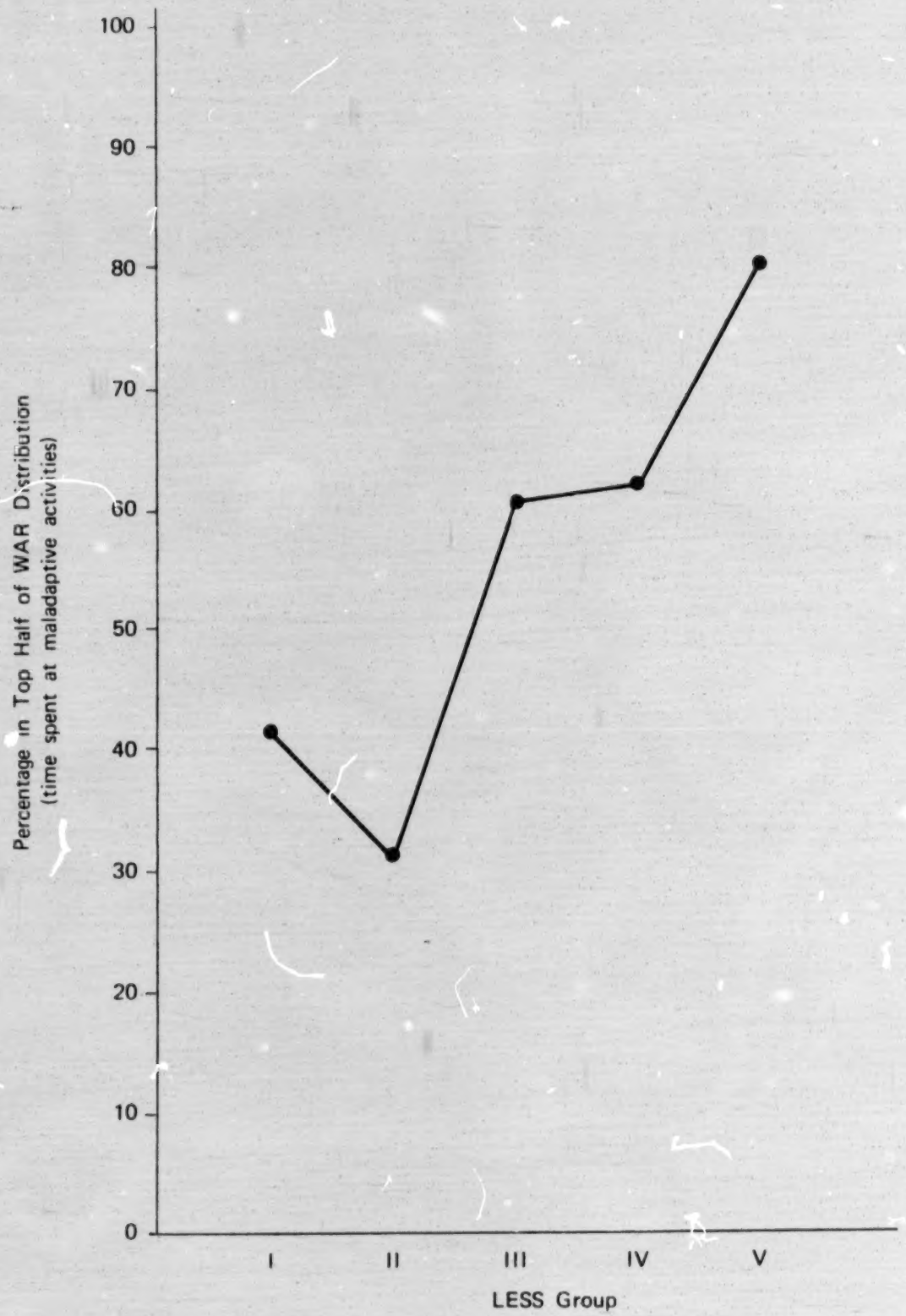

Fig. 1. Percent of *S*s scoring in the top half of the WAR distribution by LESS Group.

The upshot of the application of zero-one scoring is that it serves not only to standardize the use of the instrument in relation to the EDS and MBR, but, more basically, it generates a numerical finding for each individual that is a direct indicator of the amount of time he spends at maladaptive activities. Across the board, *the higher the WAR numerical score, the more likely the individual is to commit a more severe law violation and to recidivate.*

Table 7 contains the WAR distribution data for 168 measurements based on all law encounters of the 114 *S*s.

TABLE 7

WAR Scores for 117 Prison Releasees in the 1971 Follow-up Study Separated by LESS Group (For Groups II-V the *N*s represent the total number of law encounters rather than the total number of *S*s.)

WAR Score	LESS Group					Total
	I *N* = 42	II *N* = 52	III *N* = 31	IV *N* = 19	V *N* = 24	*N* = 168
16-17	0	3	1	4	5	13
14-15	1	5	4	5	4	19
12-13	3	6	4	0	8	21
10-11	3	9	11	4	3	30
8-9	9	16	7	3	4	39
6-7	13	10	4	3	0	30
4-5	11	3	0	0	0	14
2-3	2	0	0	0	0	2
Mean	7.3	9.7	10.4	11.5	13.4	9.8
Median	7.5	9.6	10.9	11.8	13.6	10.1
Range	2-14	4-17	6-16	6-16	8-17	3-17
Percent above grand average	13	35	48	63	80	50

Table 7 shows clearcut trends for more severe law encounters to be associated with higher WAR scores. Conversely, low WAR scores are characteristic of minimal law encounters. The averages show an orderly progression from LESS Group I to V. The percentages falling above the grand average, shown in the last row of Table 7, indicate large and significant covariation. Most cases in LESS Groups I and II fall below the grand average, and most in LESS Groups IV and V, above it. The high predictive accuracy of the WAR is again confirmed at a figure of about 80%.

The Use of the WAR in Assessing Institutional Treatment Programs

Among the objectives of the 1971 Follow-up Study was the postrelease evaluation of several institutional treatment programs. The evaluation included trainees from the EMLC's vocational manpower development and training (MDT) program, participants in a token economy program that the EMLC was operating at Draper Correctional Center, and trainees from a state trade school. Comparisons were made between these *S*s and a control group of *S*s not undergoing any institutional treatment. To compensate for the *N*s being quite small in several instances, LESS Groups I and II are combined and contrasted with Groups III-V.

Table 8 contains the data for these two law encounter groups, broken down by type of institutional treatment. The main difference apparent in this table is a large, consistent, and significant one between WAR scores for LESS Groups I-II as contrasted with Groups III-V. The differences among the four treatment conditions are slight and inconsistent. There appears to be a clustering of token economy, state trade school, and control group, with an overall average of slightly over 10. The MDT group has a median score of 12.7, but, with the appreciable variability involved in all instances, this average is not significantly different from the others. It should be noted in this context that the MDT group scores are the highest for both LESS groupings. The reason for these MDT outcomes is not immediately apparent.

TABLE 8
WAR Scores for LESS Groups I and II versus III, IV, and V by Institutional Treatment

	LESS Group		
Institutional Treatment	I and II	III-V	Both
MDT			
N	19	28	47
Median	10.2	14.6	12.7
Range	7-14	9-19	7-18
Token Economy			
N	11	10	21
Median	8.8	11.7	10.5
Range	4-14	7-17	4-17
State Trade School			
N	10	8	18
Median	8.8	9.7	9.3
Range	4-14	5-19	4-18
Control Group			
N	17	11	28
Median	9.8	11.7	10.9
Range	5-17	7-18	5-18
All Groups			
N	57	57	114
Median	9.2	13.6	11.3
Range	4-17	5-19	4-18

Absence of large-scale, consistent effects of institutional treatment programs has been found with the EDS and MBR as well as with the WAR. Such outcomes must be interpreted with extreme caution since these instruments were developed primarily to pinpoint the environmental and behavioral events antecedent to, associated with, and predictive of criminal behavior and recidivism, as well as providing a basis for treatment program development.

Measurements more specific to the intent of the institutional training programs sometimes do show an effect. For instance, in both the 1969 and 1971 follow-up studies, MDT trainees spent more time working and made more money during the first six months postrelease than did comparison *S*s without MDT training. Another case in point is WAR Item 1 (Work), where a significant difference emerged in the postrelease period favoring the MDT group over the control group. In other words, a higher percentage of the MDT trainees were working.

The Relationship between the WAR, EDS, and MBR

A basic statistical and behavioral question concerns the extent of covariation between the WAR on the one hand and the EDS and MBR on the other. It has already been established that the correlational relationship between the standard indices, the EDS and MBR, is reflected in a Pearson product-moment correlation of about .60.

In the current analysis, the data for the 114 *S*s at the 12-15 month postrelease checkpoint were employed to compute the relationship between performance on the WAR and the other two measures. The Phi Coefficient as an approximation of the Pearson product-moment correlation was employed. This twofold correlation technique yielded a value of about .40 between scores on the WAR and those on the EDS. The corresponding figure for the WAR-MBR comparison was .55. Both correlations leave a considerable degree of variation (70% or more) unaccounted for, or, put another way, independently measured by the WAR in contrast to the other two instruments.

As an overview, it clearly appears that the WAR is measuring a different dimension from those of the other two indices. In light of its validity, the WAR adds appreciably to the prediction of law encounters and violations and criminal behavior and recidivism.

Changes in the WAR over Time and Reliability

A basic parameter of any measure is its consistency and systematic trends in score over time. Test-retest measurements were available at 3-6 and 12-15 months for the *N*

of 114. The median scores for each of the five LESS groups at the two time points are summarized in Table 9. Included in this representation are the percentage of *Ss* in each LESS group increasing in score over time.

TABLE 9

Median WAR Scores by LESS Group at 3-6 Months and 12-15 Months after Release

Measurement Intervals	LESS Group I $N = 39$	II $N = 18$	III $N = 15$	IV $N = 18$	V $N = 24$	Total $N = 114$
3-6 months	9.4	10.1	11.4	11.6	11.7	10.6
12-15 months	8.7	8.4	10.8	13.0	12.5	10.3
Percent of *Ss* increasing in score over time	51	50	53	78	73	50

Moderate, insignificant decrements for about half the *Ss* may be seen for LESS Groups I, II, and III. On the other hand, LESS Groups IV and V yield significant increases in WAR scores between the two time periods. The magnitude of the differences are small (about 10%), but only 8 of 42 *Ss* showed decrements, and 4 of these did so by only one point.

Overall, there appears to be a clearcut differential trend. WAR scores are quite stable for the less severe law encounter groups and increase somewhat for the more intense ones. Across all LESS groups, the WAR appears to remain fairly constant over time so that early postrelease scores are accurate estimates of later ones.

Another way of looking at this information is in terms of the test-retest reliability coefficient. Inspection of Table 8 suggests high consistency in repeated measurements. The average change represented in this table is a loss of about 0.2, a quite insignificant and negligible amount. Such an inference is supported by the test-retest coefficient of .93 across all *Ss*. Thus the consistency and stability of WAR scores is indicated by both the reliability estimates and the change scores.

An initial study of agreement across judges (rater-rater reliability) indicates a high degree of concordance. Two independent examiners interviewed the same 10 *Ss* within a 30-day period. The Coefficient of Concordance, assessing judge agreement across WAR items, was .96. This outcome is not especially surprising since time spent at various activities

by individuals is quite constant. In addition, basic human behavior patterns such as sleep, work, and social behavior remain consistent over time.

Summary and Conclusions

An instrument measuring areas and activities to which time is allotted has been developed and validated. Time allocation, measured by the WAR, is highly predictive of law encounters, criminal behavior, and recidivism. The data collection procedure based on behavioral interviewing has been standardized, as has the scoring of the WAR for prison releasees. It should be noted in this connection that somewhat different scoring standards might be used if a different target population were under investigation, e.g., mental hospital releasees. This point, however, constitutes an experimental question. An overview of the WAR suggests that it has broad applicability, generality, and functional utility in a variety of forms of deviant and "normal" behavior.

The WAR, like the EDS and MBR, is highly predictive of postrelease success and certainly serves as a generalized criterion for that success. In examining the specific effects of any institutional or community treatment program, specific items and clusters of items for the three instruments must be examined. In some instances, investigators may well adopt the generalized model provided by these measures and develop their own assessment and evaluation instruments specific to the parameters of their treatment programs.

The WAR has also been found to be a highly effective device for communication and teaching purposes. It has been used, for instance, in training sessions at the Tuscaloosa (Alabama) Law Enforcement Academy. It is easily understood and administered and, therefore, has been utilized with civic, business, and college groups to communicate the nature of behavioral measurement.

The WAR should be employed, along with the EDS and MBR, in future studies of criminal behavior, pinpointing deficits and excesses so that more effective treatment and intervention programs can be developed and applied in both the institution and the community to lead, ultimately, to a reduction in recidivism and the development of a crime prevention program.

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